

CENTER FOR MICHIGAN AGRICULTURAL SAFETY & HEALTH



MICHIGAN STATE UNIVERSITY'S COLLEGE OF HUMAN MEDICINE & COOPERATIVE EXTENSION SERVICE

Safety Work Guidelines for Grain Handling

All the steps involved in growing, harvesting and storing grain crops require using equipment that has the potential to injure a farmer who fails to follow safe operating practices. There are several safety rules that can be applied to the planting, harvesting, transporting, drying, and storing procedures.

Avoid operator fatigue - take frequent short rest breaks if necessary. Don't take unnecessary chances when trying to complete a job in a hurry.

Plan ahead - maintain machinery on a regular basis. Check equipment before it is used.

Stop - if equipment becomes plugged or needs to be checked, make sure that all moving parts have stopped and that no one else can start the equipment while it is being checked, cleaned, or repaired. Use "lock-out" procedures when necessary.

Look - keep your eyes open and stay alert. Watch for problems.

Listen - be sure you can hear what is happening. Wear ear protection when operating equipment or working around machinery.

Follow safe operating procedures - become familiar with owner/operator manuals for all equipment that will be used. Refer to the manual for adjustment and repair information. Make certain that other workers use safe operating procedures.

Keep guards and shields in place - if guards and shields are removed for maintenance or repair

be sure to replace them BEFORE the equipment is operated again.

Keep steps and walking surfaces clean - watch for mud, ice, grease, and oil. Use handrails where provided.

Dress appropriately - wear reasonably snug fitting clothing without torn or frayed edges. Avoid jackets and sweat shirts with draw strings, which may get tangled in moving equipment.

Wear protective clothing and gear - goggles, gloves, dust masks, ear plugs, etc. should be worn whenever necessary, not just when it is convenient.



Mud, snow, manure or grease on foot surfaces of equipment can cause a serious fall.

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- Obey state and local highway and public roadway laws. Check lights for visibility from the front and the rear. Check that tall equipment will not contact overhead power lines. Be aware that some equipment may require wide turns.
- Check the owner's/operator's manuals to determine the best way to position an implement for transport on public roads.
- Distribute loads evenly and do not overload wagons. If there is a problem in stopping when hauling loads of grain, it is usually the result of the tractor being unable to stop in time with the additional weight of the wagon. Under Michigan law, only two wagons can be towed by an agricultural tractor; a pickup truck is permitted to tow only one wagon.

Safety in Grain Storage Centers

Grain storage systems have many parts, all of which require safety considerations. Read and heed all safety signs and warnings on equipment and follow manufacturers' instruction manuals.

- Grain dryers are noisy and there is a potential for explosion and/or fire. Be prepared. Have all workers wear hearing protection when the grain dryer is operating. Keep an ABC type (dry chemical) fire extinguisher near the control panel.
- Have fire department and other emergency phone numbers readily available.
- Be sure that all workers and family members are familiar with safety equipment and can contact emergency help. Teach younger children how to contact help, especially if "9 11" service is available in your area.
- Watch, smell and check for gas leaks near a grain dryer. Hire a professional for repairs to the burner or to the electronic control system. A professional should also be hired to upgrade or to install a new grain dryer system.

Storage Bin Safety

Storage bins present a multitude of potential hazards. Mold and dust are common health hazards that can cause respiratory damage. Entrapment in grain flow can cause death from suffocation. Entrapment happens very quickly and results in more deaths than injuries.

Falls from a grain bin roof or ladder can result in serious injuries or death.

Common recommendations for grain bin safety include:

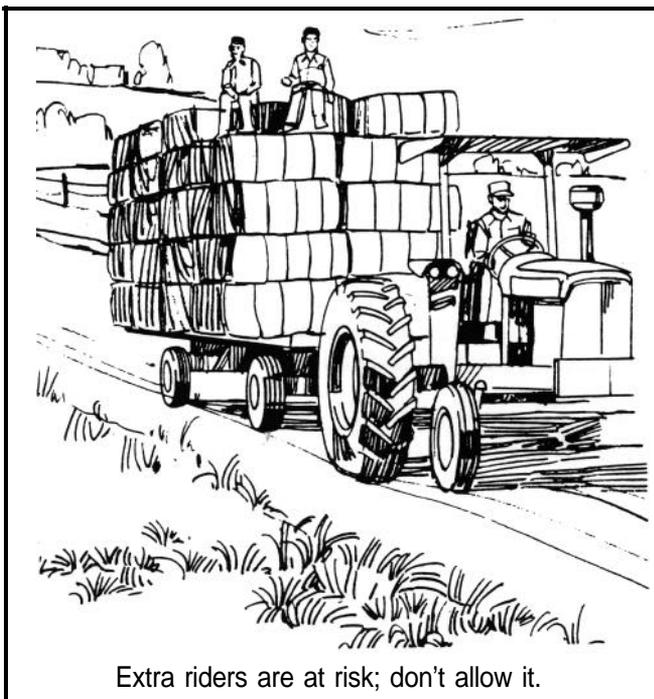
- Never enter a bin where grain is flowing. Stop the flow and shut off all automatic equipment and power.
- Use lock-out procedures when making repairs or when entering the bin for any type of inspection.
- Never enter a grain bin alone. Always make sure someone knows where you are. If possible, have two people available to help; one can go for help while the other person helps you. If you are helping, do not jeopardize yourself if you cannot safely rescue the other person.
- Attach ropes inside the bin and use a harness if you must walk on the grain. Many farmers have died after falling through a crust of spoiled grain and were buried in the loose grain underneath the crust.
- Make sure a storage bin is well ventilated before entering. Wear a respirator to protect against dust and mold.
- If trapped, but not buried, stay near the outside wall and walk around the storage bin as the grain moves downward.
- Keep ladders in good repair and free of slippery materials.
- Seek professional help if servicing or repairing the electrical or LP gas systems is necessary.

Be alert for children - curious children must be kept away from all equipment. Because they are smaller than adults it's more difficult to see them when operating equipment. Keep them away from farm operations until they are old enough to safely handle any task assigned.

Safety in the Field

Grain planting and harvesting equipment should be lubricated and maintained on a regular basis. Refer to the owner's manuals when maintenance or repairs are necessary.

- Never service equipment while it is running unless the service manual indicates that operating the machinery is necessary to perform the maintenance or repairs.
- Proper field preparation is essential to safety. "Clean" fields before planting or harvesting by removing stones, low branches and other debris that may damage equipment or injure workers. Mark obstacles that might be difficult to see when sitting in the equipment operator's seat. Be alert to changing soil conditions; excessive rainfall or heavy rains may cause gullies or "wash outs". In dry conditions ditch embankments may give way under the weight of equipment.



- Check tires for proper inflation and soundness.
- If you are driving a machine, communicate with other workers, especially when attaching implements.
- When equipment must be adjusted or serviced in the field, shut down and use lock-out procedures to assure yourself that no one else can start the equipment. Allow sufficient time for moving parts (i.e. the flywheel on a bailer) to stop before servicing.
- Keep hands out of pinch points. Numerous Michigan farmers have lost their hands while trying to free jammed chains, belts, etc. when harvesting grain. Harvesting equipment uses moving parts to remove grain from the plant; when jammed, the machine's movement is stopped, but there may be pressure on the grain or stalk that caused the jam. Once the jam is removed the machine often tends to "lurch" forward, pinching fingers, hands or anything else in its path. Don't put your hands in jeopardy.
- Block the wheels on moving parts to keep them from moving suddenly.
- Tractors and combines accept various implements. Be aware that these implements will cause the tractor or combine to handle or operate differently. Check for secure connections before operating an implement; use locking hitchpins and safety chains.
- During harvesting, stay out of trucks and wagons when grain is being loaded or unloaded. Suffocation can occur when a person is trapped in flowing grain.

Safety in Transporting

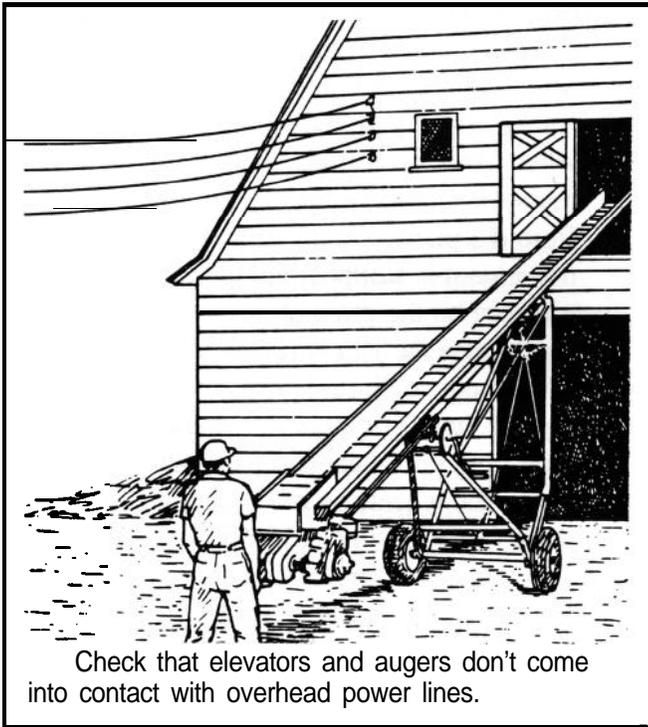
Most agricultural equipment has only one seat for the operator, extra riders are at risk and should not be allowed to ride on any agricultural tractor. Use appropriate safety equipment provided, such as seat belts or harnesses and handrails or foot rests.

- When operating equipment on the public roads, check to see that slow moving vehicle signs are securely attached, clearly visible and that they are not faded.

Grain Auger Safety

Many accidents occur around augers and conveyors. Augers are used in the field when loading and at the grain center when unloading. Use the same precautions at both locations.

- Transport an auger or conveyor in a lowered position.
- Adjustments to an auger or conveyor should be done by two people. Watch for overhead



hazards such as powerlines. Also be aware of ground conditions that could upset the auger when it is being moved or put into place.

- Check hoist cables and replace when worn or frayed.
- Never attempt to grab the spinning crank if the lift mechanism breaks out of control.
- Block the wheels and support the head of the auger or conveyor when it is in operation.
- Never go under an auger or elevator as it is being raised.

For additional information on transporting agricultural equipment on public roads see the publication "Today's Farm Equipment on Public Roads." The pamphlet, published by the Office of Highway Safety Planning, a division of the Department of State Police, State of Michigan, is available at your local Cooperative Extension Service office.

Reference:

Illustrations courtesy of Deere & Company, Moline, Illinois, *Agricultural Safety, Fundamentals of Machine Operation series, 1987.*

Reviewed: R.Brook, Agricultural Engineering, Michigan State University.

WHAT IS THE CMASH PROGRAM?

The Center for Michigan **Agricultural Safety and Health (CMASH)** takes traditional Cooperative Extension Service farm safety programs a step further by taking a holistic approach to improving the health of the state's rural residents. Under CMASH, farm safety is augmented with a program to assist healthcare professionals in diagnosing and managing illnesses common to the farm industry.

The program is a joint effort of Michigan State University's Colleges of Agriculture and Natural Resources, Human Medicine, Osteopathic Medicine, Nursing and Veterinary Medicine, the Cooperative Extension Service, Institute for Environmental Toxicology and the Pesticide Research Center.

CMASH is not a regulatory agency, it is an educational center designed to encourage agricultural producers to protect themselves from occupational injuries and diseases. Comments or questions can be addressed to: Howard Doss, Extension Agricultural Safety Specialist, MSU Cooperative Extension Service, 223 A.W. Farrall Agricultural **Engineering** Hall, Michigan State University, East Lansing, MI 48824.

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